

**CLAIMS**

1. An isolated nucleic acid encoding an *M. catarrhalis* polypeptide of SEQ ID NOS:  
1921-3840.
2. A recombinant expression vector comprising the nucleic acid of Claim 1 operably  
linked to a transcription regulatory element.
3. A cell comprising a recombinant expression vector of Claim 2.
4. A method for producing an *M. catarrhalis* polypeptide comprising culturing a cell of  
Claim 3 under conditions that permit expression of the polypeptide.
5. An isolated nucleic acid selected from the group consisting of:
  - (a) SEQ ID NOS: 1-1920;
  - (b) a complement of SEQ ID NOS: 1-1920; or
  - (c) an RNA of (a) or (b), wherein U is substituted for T.
6. A recombinant expression vector comprising the nucleic acid of Claim 5 operably  
linked to a transcription regulatory element.
7. A cell comprising a recombinant expression vector of Claim 6.
8. A method for producing an *M. catarrhalis* polypeptide comprising culturing a cell of  
Claim 7 under conditions that permit expression of the polypeptide.

9. A probe comprising a nucleotide sequence consisting of at least eight contiguous nucleotides of a nucleotide sequence selected from the group consisting of:
- (a) SEQ ID NOS: 1-1920;
  - (b) a complement of SEQ ID NOS: 1-1920; or
  - (c) an RNA of (a) or (b), wherein U is substituted for T.
10. An isolated nucleic acid comprising a nucleotide sequence of at least eight nucleotides in length, wherein the sequence is hybridizable to a nucleic acid having a nucleotide sequence selected from the group consisting of:
- (a) SEQ ID NOS: 1-1920;
  - (b) a complement of SEQ ID NOS: 1-1920; or
  - (c) an RNA of (a) or (b), wherein U is substituted for T.
11. A vaccine composition for prevention or treatment of an *M. catarrhalis* infection comprising a nucleic acid of Claim 5 and a pharmaceutically acceptable carrier.
12. A vaccine composition of Claim 11, further comprising an adjuvant.
13. A vaccine composition of Claim 11, further comprising one or more additional ingredients.
14. A method of treating a subject for *M. catarrhalis* infection comprising administering to a subject a vaccine composition of Claim 11, such that treatment of *M. catarrhalis* infection occurs.
15. A method of Claim 14, wherein the treatment is a prophylactic treatment.
16. A method of Claim 14, wherein the treatment is a therapeutic treatment.

17. A recombinant or substantially pure preparation of an *M. catarrhalis* polypeptide or a fragment thereof, wherein said *M. catarrhalis* polypeptide is SEQ ID NOS: 1921-3840.
- 5 18. A vaccine composition for prevention or treatment of an *M. catarrhalis* infection comprising an *M. catarrhalis* polypeptide of Claim 17 and a pharmaceutically acceptable carrier.
19. A vaccine composition of Claim 18, further comprising an adjuvant.
- 10 20. A vaccine composition of Claim 18, further comprising one or more additional ingredients.
- 15 21. A method of treating a subject for *M. catarrhalis* infection comprising administering to a subject a vaccine composition of Claim 18, such that treatment of *M. catarrhalis* infection occurs.
22. A method of Claim 21, wherein the treatment is a prophylactic treatment.
- 20 23. A method of Claim 21, wherein the treatment is a therapeutic treatment.
24. A method for detecting the presence or absence of a *Klebsiella* nucleic acid in a sample comprising:
- 25 (a) contacting a sample with the nucleic acid of Claim 5 under conditions in which a hybrid can form between a probe comprising a nucleotide sequence consisting of at least eight contiguous nucleotides of a nucleotide sequence selected from the group consisting of SEQ ID NOS: 1-2501 or a complement of SEQ ID NOS: 1-1920 and a *Klebsiella* nucleic acid in the sample; and
- 30 (b) detecting the hybrid formed in step (a), wherein detection of a hybrid indicates the presence or absence of a *Klebsiella* nucleic acid in the sample.

25. A computer readable medium having recorded thereon a nucleotide sequence selected from the group consisting of:
- (a) SEQ ID NOS: 1-1920;
  - 5 (b) a complement of SEQ ID NOS: 1- 1920;
  - (c) an RNA of (a) or (b), wherein U is substituted for T; or
  - (d) a fragment of (a), (b) or (c).
- 10 26. A computer based system for identifying fragments of the *Klebsiella* genome of comprising;
- a) a data storage means comprising a nucleotide sequence selected from the group consisting of SEQ ID NOS: 1-1920, a complement of SEQ ID NOS: 1-1920, or a fragment thereof,
  - b) a search means for comparing a target sequence to the nucleotide sequences  
15 of the data storage means of step (a) to identify homologous sequences, and;
  - c) a retrieval means for obtaining said homologous sequences(s) of step (b).
- 20 27. A method of identifying nucleic acid fragments of a *Klebsiella* genome comprising comparing a database comprising a nucleotide sequence selected from the group consisting of SEQ ID NOS: 1-1920; a complement of SEQ ID NOS: 1-1920; or a fragment thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide sequence to said target sequence, wherein said target sequence is not randomly selected.
- 25 28. A method for identifying an expression modulating fragment of the *Klebsiella* genome comprising comparing a database comprising a nucleotide sequence selected from the group consisting of SEQ ID NOS: 1- 1920; a complement of SEQ ID NOS: 1-1920; or fragment thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide sequence to said target sequence, wherein  
30 said target sequence comprises sequences known to regulate gene expression.